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10/815,258	03/31/2004	Dennis Michael Gray	132407-3	7463

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EXAMINER

IVEY, ELIZABETH D

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 02/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/815,258

Applicant(s)

GRAY ET AL.

Examiner

Elizabeth Ivey

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-20, 22-39, 41-52 and 54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-20, 22-39, 41-52 and 54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Objections

Claim 1 is objected to because of the following informalities: the word matrix in line 5 of the amended claim is misspelled "matric". Appropriate correction is required.

Allowable Subject Matter

The indicated allowability of claim 10 now incorporated into claim 1, claim 12, claim 21, now incorporated into claim 17, claim 22, claims 26-44, claim 40 and claims 45-52 is withdrawn in view of the newly discovered reference(s) to U.S. Patent 3,762,882 to Grutza, U.S. Patent 6,372,012 B1 to Majagi et al., U.S. Patent 3,061,525 to Grazen et al., U.S. Patent 4,305,792 to Kedward et al. and U.S. Patent 4,833,041 to McComas. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A Markush-type claim recites alternatives in a format such as "selected from the group consisting of A, B and C." *MPEP 803.02 [R-3]*. The word "or" in line 3 of claim 23 should be changed to "and" to properly represent the Markush group. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

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claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-6 8-9, 12-16, 17, 19, 20, 22-25 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 3,762,882 to Grutza.

Regarding claims 1, 3 and 17, Grutza discloses a coating for surfaces such as surfaces of engine components, comprising a metal matrix with diamond (hard) particles evenly and uniformly distributed throughout the metal matrix forming a uniform and continuous plating (abstract and column 1 lines 63-67 and column 2 lines 30-36). Grutza further discloses nitride and oxide additives such as KCN, CdO and NaCN in the matrix (column 5 lines 15-22 and column 6 lines 5-35). Grutza does not expressly disclose a distance between particles of equal to or less than 10 μ m, however Grutza does disclose an even and uniform distribution of diamond particles ranging in size from .01 - 30 μ m in diameter and densities of 1-20 g/l of diamonds dispersed in the matrix (column 1 lines 6-8 and 65-67 and examples in columns 4-6). Grutza also discloses that the concentration of diamond particles depends upon the type of bath in which they are dispersed and the density of the diamonds desired in the matrix (column 3 lines 13-15). Therefore it would have been obvious to a person having ordinary skill in the art at the time of the invention to optimize the desired size and volume of diamonds to arrive at a distance between particles of equal to or less than 10 μ m or 5 μ m for the particular application.

Regarding claim 4, Grutza discloses a uniform and continuous plating (abstract and column 1 lines 63-67).

Regarding claims 5, 12, 19, 22 and 54, Grutza discloses diamond particles ranging in size from .01 - 30 μ m in diameter (column 1 lines 6-8). This includes some nanoparticles between 1 and 100nm in diameter as defined on page 10 in paragraph [0028] of the applicant's specification.

Regarding claims 6 and 20, Grutza discloses the metal matrix as based on metals including Ni, Co and Fe (column 3 lines 15-16 and 52-55).

Regarding claims 8 and 9, Grutza discloses electrodeposition, however, claims 8 and 9 are product by process claim wherein the patentability of the product does not depend on its method of production. "If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process unless it can be shown that the product produced by the process is in some manner measurably distinct from the product produced by another process." *See MPEP 2113*. As such, the process limitation within claims 8 and 9 do not provide patentable distinction over the prior art.

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Regarding claims 13 and 23, Grutza discloses diamond particles (abstract and column 1 lines 63-67).

Regarding claims 14 and 24, Grutza discloses a continuous plating and discloses the thickness may vary anywhere from .000039 – 0.25 inches which includes greater than 25 μ m (column 8 lines 28-31).

Regarding claims 15 and 25, Grutza discloses diamond particles whose inherent hardness is 10 on the Mohs scale as confirmed known to the applicant on page 5 paragraph [0016] of the applicant's specification (column 1 lines 51-54).

Regarding claim 16, Grutza discloses any articles that come in contact with other surfaces such as surfaces of engine components can be coated with this coating to prolong their useful operating lives by reducing wear and friction (column 2 lines 30-36). Therefore it would have been obvious to a person having ordinary skill in the art at the time of the invention to coat hydroelectric turbine components, since they are engine components that come into contact with other materials.

Claims 2, 7, 11 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 3,762,882 to Grutza in view of U.S. Patent 6,372,012 B1 to Majagi et al.

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Regarding claims 2, 7, 11 and 18, Grutza discloses all of the limitations of claims 1 and 17 but does not disclose particles coated with a film different from the metal matrix, comprising Ni, Cr or Ti compounds or oxides, borides, nitrides carbides or mixtures thereof. However, Majagi discloses coating diamond or cubic boron nitride (CBN) particles with a film of carbides, borides or nitrides of elements such as nickel, titanium and chromium among others, in order to form a “superhard” filler for a metal matrix made from materials such as iron and nickel among others, in which the particles are embedded (column 1 lines 24-27, column 3 lines 13-17 and 55-59, column 5 lines 43-51 and column 5 line 66 – column 6 line 3). Majagi discloses the coating may have the same or a different composition as the metal matrix (column 2 lines 39-44). Majagi discloses this coating, protects the diamond material and promotes metallurgical bonding of the diamond with the metal matrix. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use the coated diamond particles of Majagi as the diamond particles of Grutza in order to form a “superhard” material coating with improved bonding between the particles and the metal matrix.

Claims 26-30, 32-34, 45-47, 49-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 3,762,882 to Grutza in view of U.S. Patent 4,305,792 to Kedward et al., further in view of U.S. Patent 4,833,041 to McComas.

Regarding claims 26, 45 and 46 and 52, Grutza discloses an electroplating process, which can be used to make articles such as engine components, involving suspending diamond particles in an aqueous solution containing metal sulfates such as nickel sulfate (column 2 lines 8-14, 30-36 and 41-48 and column 6 lines 48-52, column 7 lines 14-22). The process further involves an

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article, immersed in the solution and agitated, viz. rotated then halted when the solution is electrolyzed (column 1 lines 50-54-56 and column 2 lines 67-68 and column 3 lines 1-6). Grutza does not specifically disclose deionized water but because the bath is a chemical bath relying upon ionization, it would have been obvious to any person having ordinary skill in the art at the time of the invention to use deionized water. Grutza does not disclose electroless plating or a hypophosphite solution but Kedward discloses a similar plated article made by either electroplating or electroless plating using a hypophosphite solution. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a hypophosphite solution in an electroless plating process to produce the same plating as Grutza produced with the electroplating process since electroplating and electroless plating are used interchangeably to plate such materials as indicated by Kedward. Neither Grutza nor Kedward fully detail the electroless plating process and do not disclose heating the bath for processing. However, McComas discloses, in more detail, an electroless plating process used to produce wear resistant alloy coatings and discloses that in a typical process the article is immersed in a hot bath at 180-210°F or about 82-99°C (column 5 lines 5-7). Although not specifically disclosed, it would have been obvious to any person having ordinary skill in the art at the time of the invention to remove the article from the bath in order to use it. Neither Grutza nor Kedward disclose heating the component after removal from the bath. However, McComas discloses that heat treatment of the coated article can increase the hardness of the coating and discloses heat treating after coating at temperatures ranging from 375 to 750°F depending on the time at temperature resulting in a Knoop of 1000 or approximately 7 on the Mohs scale of hardness. Because McComas discloses a typical heat treating process for a wear resistant alloy coating, it

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would have been obvious to a person having ordinary skill in the art at the time of the invention to incorporate the heating of the bath and the heat treatment of the article after coating of McComas with the materials of Grutza and Kedward to create a superhard particle and metal matrix coating for an engine component by an electroless plating process.

Regarding claims 27 and 50, Grutza, Kedward and McComas disclose all of the limitations of claims 26 and 45 but do not expressly disclose a distance between particles of equal to or less than 10 μ m, however Grutza does disclose an even and uniform distribution of diamond particles ranging in size from .01 - 30 μ m in diameter and densities of 1-20 g/l of diamonds dispersed in the matrix (column 1 lines 6-8 and 65-67 and examples in columns 4-6). Grutza also discloses that the concentration of diamond particles depends upon the type of bath in which they are dispersed and the density of the diamonds desired in the matrix (column 3 lines 13-15). Therefore it would have been obvious to a person having ordinary skill in the art at the time of the invention to optimize the desired size and volume of diamonds to arrive at a distance between particles of equal to or less than 10 μ m or 5 μ m for the particular application.

Regarding claims 28 and 29, Grutza, Kedward and McComas disclose all of the limitations of claim 26 and McComas discloses replenishing the bath to maintain a preferred concentration range for the metal ion components (column 5 lines 25-48). Although Grutza, Kedward and McComas do not expressly disclose a metal ion concentration of 5.5 – 6.3 g/l of bath solution, however Grutza does disclose 20 g/l of metal ion (column 3 line 15-17). It would have been obvious to a person having ordinary skill in the art at the time of the invention to

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adjust and replenish the bath to maintain the metal ion concentration for the intended application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 30 and 47, Grutza, Kedward and McComas disclose all of the limitations of claims 26 and 45 and Grutza discloses H_3BO_3 additions to the solution (column 4 example 1 and column 6 lines 52-53).

Regarding claims 32 and 49, Grutza, Kedward and McComas disclose all of the limitations of claims 26 and 45 and Grutza discloses volume fractions of hard particle of 40% (column 3 line 13-19).

Regarding claim 33, Grutza, Kedward and McComas disclose all of the limitations of claim 26 but do not expressly disclose a distance between particles of equal to or less than $10\mu m$, however Grutza does disclose an even and uniform distribution of diamond particles ranging in size from .01 - $30\mu m$ in diameter and densities of 1-20 g/l of diamonds dispersed in the matrix (column 1 lines 6-8 and 65-67 and examples in columns 4-6). Grutza also discloses that the concentration of diamond particles depends upon the type of bath in which they are dispersed and the density of the diamonds desired in the matrix (column 3 lines 13-15). Therefore it would have been obvious to a person having ordinary skill in the art at the time of the invention to optimize the desired size and volume of diamonds to arrive at a distance between particles of equal to or less than $10\mu m$ or $5\mu m$ for the particular application.

Regarding claims 34 and 51, Grutza, Kedward and McComas disclose all of the limitations of claims 26 and 45 and Grutza discloses a coating thickness which may vary anywhere from .000039 – 0.25 inches which includes greater than 25 μ m (column 8 lines 28-31).

Claims 31 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 3,762,882 to Grutza in view of U.S. Patent 4,305,792 to Kedward et al. and U.S. Patent 4,833,041 to McComas further in view of U.S. Patent U.S. Patent 6,372,012 B1 to Majagi et al.

Regarding claims 31 and 48, Grutza, Kedward and McComas disclose all of the limitations of claims 26 and 45 and Grutza discloses particle diameters of .01 - 30 μ m in diameter including nanoparticles between 1 and 100nm in diameter as defined on page 10 in paragraph [0028] of the applicant's specification (column 1 lines 6-8). Grutza does not disclose nanoparticles comprising carbides, borides, nitrides or oxides with at least one metal selected from a group of metals consisting of Al, Si, W, Cr, Ti, Nb, Zr, Hf, Ta, and Mo however Majagi discloses the use of electro and electroless plating methods to apply a coating of particles comprising carbides, borides, nitrides or oxides of elements such as Al, Si, W, Cr, Ti, Nb, Zr, Hf, Ta, and Mo by using particle of the same size as the hard particles such as the diamond particles of Grutza which include nanoparticles (column 5 lines 43-51, column 6 lines 1-3, column 7 lines 8-16, column 8 lines 40-45 and column 9 lines 33-63). Majagi discloses the use of these materials to form "superhard" coatings with good particulate bonding with the matrix and fewer coating flaws (column 6 lines 4-15). Therefore, it would have been obvious to any person

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having ordinary skill in the art at the time of the invention to use the materials of Majagi in the process of Grutza to create a superhard coating with good particulate bonding with the matrix and fewer coating flaws.

Claims 35-37, 39 and 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 3,762,882 to Grutza in view of U.S. Patent 6,372,012 B1 to Majagi et al.

Regarding claim 35, Grutza discloses an electroplating process involving suspending diamond particles in an aqueous solution containing metal sulfates (column 2 lines 8-141-6 and 41-48 and column 6 lines 48-52, column 7 lines 14-22). Grutza discloses particle diameters of .01 - 30 μ m in diameter (column 1 lines 6-8) including nanoparticles between 1 and 100nm in diameter as defined on page 10 in paragraph [0028] of the applicant's specification. The process further involves an article, which is made to act as a cathode and immersed in the solution and agitated, viz. rotated then halted when the solution is electrolyzed (column 1 lines 50-54-56 and column 2 lines 67-68 and column 3 lines 1-6). A current is then run through the bath thereby forming a hard particle and metal coating (column 8 lines 43-47). Grutza does not specifically disclose deionized water but because the bath is a chemical bath relying upon ionization, it would have been obvious to any person having ordinary skill in the art at the time of the invention to use deionized water. Grutza does not disclose nanoparticles comprising carbides, borides, nitrides or oxides with at least one metal selected from a group of metals consisting of Al, Si, W, Cr, Ti, Nb, Zr, Hf, Ta, and Mo however Majagi discloses the use of electro and electroless plating methods to apply a coating of particles comprising carbides, borides, nitrides or oxides of elements such as Al, Si, W, Cr, Ti, Nb, Zr, Hf, Ta, and Mo by using particle of the

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same size as the hard particles such as the diamond particles of Grutza which include nanoparticles (column 5 lines 43-51, column 6 lines 1-3, column 7 lines 8-16, column 8 lines 40-45 and column 9 lines 33-63). Majagi discloses the use of these materials to form "superhard" coatings with good particulate bonding with the matrix and fewer coating flaws (column 6 lines 4-15). Therefore, it would have been obvious to any person having ordinary skill in the art at the time of the invention to use the materials of Majagi in the process of Grutza to create a superhard coating with good particulate bonding with the matrix and fewer coating flaws. Although not specifically disclosed it would have been obvious to any person having ordinary skill in the art at the time of the invention to remove the article from the bath in order to use it.

Regarding claim 36, Grutza and Majagi disclose all of the limitations of claim 35 but do not expressly disclose a distance between particles of equal to or less than $10\mu\text{m}$, however Grutza does disclose an even and uniform distribution of diamond particles ranging in size from .01 - $30\mu\text{m}$ in diameter and densities of 1-20 g/l of diamonds dispersed in the matrix (column 1 lines 6-8 and 65-67 and examples in columns 4-6). Grutza also discloses that the concentration of diamond particles depends upon the type of bath in which they are dispersed and the density of the diamonds desired in the matrix (column 3 lines 13-15). Therefore it would have been obvious to a person having ordinary skill in the art at the time of the invention to optimize the desired size and volume of diamonds to arrive at a distance between particles of equal to or less than $10\mu\text{m}$ or $5\mu\text{m}$ for the particular application.

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Regarding claim 37, Grutza and Majagi disclose all of the limitations of claim 35 but Grutza and Majagi do not specifically disclose a metal ion concentration of 5.5 – 6.3 g/l of bath solution, however Grutza does disclose 20 g/l of metal ion (column 3 line 15-17). It would have been obvious to a person having ordinary skill in the art at the time of the invention to adjust the metal ion concentration for the intended application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 39, Grutza and Majagi disclose all of the limitations of claim 35 and Grutza discloses H_3BO_3 additions to the solution (column 4 example 1 and column 6 lines 52-53).

Regarding claim 41, Grutza and Majagi disclose all of the limitations of claim 35 and Grutza discloses volume fractions of hard particle of 40% (column 3 line 13-19).

Regarding claim 42, disclose all of the limitations of claim 26 but do not expressly disclose a distance between particles of equal to or less than $10\mu\text{m}$, however Grutza does disclose an even and uniform distribution of diamond particles ranging in size from .01 - $30\mu\text{m}$ in diameter and densities of 1-20 g/l of diamonds dispersed in the matrix (column 1 lines 6-8 and 65-67 and examples in columns 4-6). Grutza also discloses that the concentration of diamond particles depends upon the type of bath in which they are dispersed and the density of the diamonds desired in the matrix (column 3 lines 13-15). Therefore it would have been obvious to

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a person having ordinary skill in the art at the time of the invention to optimize the desired size and volume of diamonds to arrive at a distance between particles of equal to or less than 10 μ m or 5 μ m for the particular application.

Regarding claim 43, Grutza and Majagi disclose all of the limitations of claim 35 and Grutza discloses a coating thickness which may vary anywhere from .000039 – 0.25 inches which includes greater than 25 μ m (column 8 lines 28-31).

Regarding claim 44, Grutza and Majagi disclose all of the limitations of claim 35 and Grutza discloses diamond particles, whose inherent hardness is 10 on the Mohs scale as confirmed known to the applicant on page 5 paragraph [0016] of the applicant's specification (column 1 lines 51-54).

Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 3,762,882 to Grutza in view of U.S. Patent 6,372,012 B1 to Majagi et al. further in view of U.S. Patent 3,061,525 to Grazen et al.

Regarding claim 38, Grutza and Majagi do not specifically disclose replenishing the bath to maintain a metal ion concentration of 5.5 – 6.3 g/l of bath solution, however Grutza does disclose 20 g/l of metal ion (column 3 line 15-17). Additionally, Grazen discloses adjustment and replenishment of the bath as a normal part of the electroplating process (column 6 lines 50-

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58). It would have been obvious to a person having ordinary skill in the art at the time of the invention to replenishment of the bath as a normal part of the electroplating process and to adjust the metal ion concentration for the intended application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

Examiner acknowledges applicant's amendment to the specification and withdraws objection to the specification.

Examiner acknowledges applicant's amendments of claims 1, 13, 17, 23, 35, cancellation of claims 10, 21, 40, and 53 and addition of new claim 54 and withdraws objections to claims 13 and 23 but indicates an objection to claim 1.

Applicant's arguments with respect to claims 1-9, 11-20, 22-39, 41-52 have been considered but are moot in view of the new ground(s) of rejection.

New claim 54 is rejected as indicated above.

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Conclusion

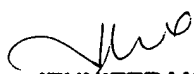
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 3,876,434 to Dutkewych discloses replenishment of Ni electroless plating solutions containing nickel sulfate and a hypophosphite.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Ivey whose telephone number is (571) 272-8432. The examiner can normally be reached on 7:00- 4:30 M-Th and 7:00-3:30 alt. Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EDI


JENNIFER MCNEIL
PRIMARY EXAMINER
2/1/06